N.A.C.A. BULLETIN

In Two Sections

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EDITORIAL DEPARTMENT NOTE

At a time when cost accounting is once more coming into its own, it is worth while to re-examine its rationale and to trace its development. The article on "Concepts of Cost, Past and Present" presents a brief survey of the changes that have taken place in the cost accountant's thinking and may therefore aid the new generation of cost accountants in avoiding some of the mistakes made in the past.

THEODORE LANG, author of the article, is Professor of Accounting at New York University in both its graduate and undergraduate schools. A graduate of Harvard College and of the Harvard Graduate School of Business Administration, he has had a varied career in industrial and public accounting. He is author and co-author of a number of books in accounting and business mathematics, and editor of the Cost Accountants' Handbook. He is also a member of the Headquarters staff of our Association and of its Research Committee.

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It often has been stated that cost reduction follows automatically as a kind of by-product of efficient management. This is a somewhat negative attitude. Many organizations have found that real cost reduction can be achieved only by a positive approach to the subject in the form of systematic research. Some tested methods for pursuing such research are presented in the article on "Organization for Cost Reduction."

MAITLAND A. SMITH, its author, graduated from the Carnegie Institute of Technology in 1929 and has been working for the General Electric Co. ever since. He handled a variety of cost and accounting assignments at the Erie Works until his transfer to the company's general office at Schenectady. In 1940 he was transferred to the Fort Wayne Works where he is on the staff of works accountant as Supervisor of Cost.

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Some practical aspects of cost reduction as applied to office work are presented in the article on "Making the Office Pay a Profit." This should be of interest to all in providing an up-to-date treatment of a subject that tends often to be neglected.

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JULY 15, 1947

CONCEPTS OF COST, PAST AND PRESENT

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WORLD War II was fought with all the technological resources of all the nations involved. The assembling of the raw materials, the production of the equipment, and its distribution to the various theatres of operations required a behind-the-scenes attention to a myriad of details and an alert and up-to-date type of administration in which the accountant and cost accountant played impressive roles. Their services were sought by government and business in planning, scheduling, and budgeting functions. They performed their appointed duties in the field of pricing, and kept track of the vast movements of goods and equipment. This was indeed a tribute to our profession and it recognized the abilities of its practitioners as analysts, as organizers, and as controllers of the intricate economic pattern of our civilization. It was not always like this; the following quotation from the writings of the late Elbert Hubbard will convey a picture of the opinion in which people generally held accountants roughly about half a century ago:

> "The typical auditor is a man past middle age, spare, wrinkled, intelligent, cold, passive, non-committal, with eyes like a codfish, polite in contact, but at the same time unresponsive, cold; calm and damnably composed as a concrete post or a plaster-of-paris cast; a human petrification with a heart of feldspar and without charm of the friendly germ, minus bowels, passion, or a sense of humor. Happily they never reproduce and all of them finally go to Hell."

If that seems a somewhat brutal characterization of our practically prehistoric accountants, it was probably no more than they deserved. It is therefore proper to examine the development of the cost accountant's thinking with respect to his professional activities. That is, in order to understand what the cost accountant is doing and trying to do, it might be in order to inquire what he has done in the past, to see if there is any discernible trend in his thinking. Thus, such a study might shed some light on the future development of cost accounting.

For a generation we have been saying that cost accounting is in its infancy. To be sure, it has grown rapidly in recent years, but it would be foolish to maintain that it is fully developed. For to do so would at once imply the achievement of a static condition which always constitutes a bar to further progress. Though it may be generally agreed that a great deal of progress has been made, a great deal more is possible.

Historical Costs

Somewhere around the turn of the century cost accountants were caught up in the general industrial movement which later became known as scientific management. The role assigned to them was somewhat subordinate; they were considered as a more or less necessary evil to be tolerated. This was partly the fault of the accountant, for once he had formulated the idea of finding product costs in terms of functional activities he became the victim of his own lack of imagination. He decided that what was wanted and needed was the *actual* cost of a manufactured product. Undoubtedly this was a carry-over from the field of financial accounting with its insistence on accounting for what has taken place over a period of time. The point is forcibly brought out in the following quotation:

> "The essential points in a costing system that will meet the requirements of a manufacturer are as follows:
>
> 1. The facts and information collected should be based on the actual figures of the private ledger and the current expenses of the business, and not on any estimated or hypothetical figures from his own or any other business. . . ." *

And so the cost accountant bravely set out on the adventure to discover what the actual cost was. He conceived the problem to be quite simple. Thus, all that he considered necessary was to accumulate costs by processes or by job orders and divide them by the number of units produced as shown by the production report. In this way the actual unit cost of the finished article was obtained.

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* W. Howard Hazell, Costing for Manufacturers, Nisbet & Co., Ltd., London, 1921, p. 35.

Simple, isn't it? But not quite as simple as it sounds. A close examination of the elements of material, labor, and factory expense which make up the unit product cost shows them to be affected by a variety of factors:

1. As to material, they are affected by varying methods of pricing stores issues or of inventory valuation.
2. As to labor, the costs are affected by the presence of overtime, multiple shifts, social security, etc., and the treatment accorded them in the accounts.
3. As to overhead, the unit costs are affected by the size of an order, or in general by the volume of business done, by the inclusion or exclusion of a variety of more or less controversial expenses, and by many other factors.

Material Costs

Our hypothetical accountant has decided to charge to the product the *actual* material cost, that is, the price paid for it. But suppose in the storeroom there is a raw material item acquired at different prices. Which price, if any, is to be used? It does no good to say, charge at actual cost, since there are half a dozen or more methods of pricing, all of which are actual costs. At once it becomes necessary to decide whether to use specific costs, first-in first-out, last-in first-out, or average costs; and if the latter, whether the average is to be simple, weighted, periodic, or moving.

With some qualifications regarding the last-in first-out method, these are all actual cost methods, and to these may be added others used mainly in connection with inventory valuation rather than pricing stores issues. But inventory valuations are bound to affect the cost of production. The important point to remember is that these methods are not just different ways of producing the same result; they produce different answers. And when different answers are obtained, one naturally asks which is the right one? Picture then the amazement of the layman when he is informed, "Why, all of them are correct." He does not understand. Perhaps he holds a contract calling for a percentage of profit over the cost of production, and so he gets the idea that he might as well pick the highest production cost in order to maximize his profits. Of course, he does not know that a method producing a high cost this year may produce a low cost the next. It is for this reason that accountants avoid, as far as possible, changing the bases of valu-

ation, and both accountants and the Treasury Department wisely insist on following "generally accepted principles of accounting, maintained on a basis consistent with that of the previous year."

Direct Labor

Theoretically, there should be no difficulty in ascertaining the actual cost of direct labor. But even here the situation quickly becomes somewhat complex. There is always the perplexing problem of how to charge overtime. Should it be charged to the particular job worked on? That might cause some protest on the part of the buyer who has to pay for overtime on *his* job. He may contend, and rightly so, that by shifting the production schedule around, his job could have been worked on during the regular hours and hence be free from overtime bonus. The fact is that overtime is often made necessary not by any particular job, but by the total volume to be produced in a given time. More or less the same argument holds true for shift bonuses, social security taxes, employee training, vacation pay, and that nightmare of recent years, the retroactive wage increase. What is the alternative if we decide not to charge direct labor or the particular job or process for the above items? The answer of course is that these items might be charged as part of the general overhead to be prorated in some manner to all jobs or products worked on during the period.

Manufacturing Expense

The biggest difficulty, of course, is encountered in attempting to charge actual manufacturing expense to the product. This was commonly done by converting the accumulated overhead of a period to some sort of overhead rate and then charging the jobs or processes of that period in accordance with the rate so established. Except in the simplest cases this method has pretty well died out; but it is a fair picture of conditions as they were more than a generation ago.

To begin with, there are a number of debatable items; i.e., items whose inclusion as manufacturing expense is not by any means settled. There is, for example, the problem of interest on the investment as a manufacturing cost. Most accountants have disposed of it by ignoring it, and the controversy that raged so furiously in 1920 has pretty well died down. However, it does exist in modified form. Recently a distiller wanted to know whether

interest on direct cash loans could be treated as a manufacturing cost. Offhand, the answer would be that interest on borrowed money is not an element in the cost of production, such interest traditionally being treated as financial management expense, shown in another part of the profit and loss statement. This belief is reinforced by T. D. 5000 which listed as the first item of *inadmissible* costs "Allowances for interest on invested or borrowed capital, however represented." That would seem to dispose of the distiller's case. But when one comes to think about it, it does not seem quite right. Ordinarily a distiller who wants to age liquor in bond has a great deal of money tied up in inventory, and to finance the inventory he has to borrow money, pledging the merchandise as security for the loan. Now the price of liquor is quite obviously influenced by the length of time it remains in bond; mathematically speaking, the price is a function of time, the enhancement in value depending on storage costs, amount of evaporation, and interest charges. The same is true probably in the case of tobacco which, if we are to believe the cigarette advertisements, is aged for two years or more.

Nowadays the problem of the distiller might be tackled differently. Instead of trying to decide whether interest is a manufacturing cost or financial expense, the question would be resolved by deciding for what purpose the cost was wanted. Thus if it turned out that the cost was to be used as a base for pricing, the answer would be that what is needed is an over-all cost to make and sell. In other words, different uses to which costs are to be put determine the kinds of cost which will satisfy those uses.

Administrative Expense and Taxes

What about general administrative expenses? When I went to school, orthodox doctrine was that all costs were either manufacturing or selling. Hence general administrative expenses were prorated over these two major items; in this way, a portion of administrative expenses ultimately found its way into inventories. In theory there is nothing wrong with this, but somehow a feeling developed that this tended towards inventory inflation and though some accountants follow the old doctrine, the majority seem to favor exclusion of general administrative expense from inventory, and hence from manufacturing expense.

An exhaustive study by the N. A. C. A. shows a wide variety of practices, even regarding income taxes. While the great ma-

jority of companies treats the latter in the conventional manner as charges against profits, an appreciable number shows other treatments, viz., inclusion in manufacturing cost or in administrative expense, etc. And as we go down the line of the various taxes, differences in treatment become more pronounced. This affects property taxes, both real and personal, sales taxes, customs duties, payroll taxes, various excise taxes, etc.

Depreciation and Research

Here is a situation where the uninitiated might say there cannot be much room for argument. Any depreciable asset devoted to production should have its depreciation included in the cost of production. But immediately several difficulties arise:

1. The amount of depreciation is arrived at, no matter how accountants try to delude themselves, by a kind of guessing game. They are guessing as to the life expectancy of the asset.
2. What method is to be used in writing off the asset?
3. In addition, there is the recurring controversy as to whether depreciation is to be taken on historical cost or on a reproduction cost basis.

The situation is no better with respect to research and development costs. Here the question is whether to capitalize such costs and write them off over a period of time or over an expected volume of production, or whether they are to be absorbed currently. The reason the latter method is so popular is because of its convenience. The first two methods bristle with difficulties, and when they are put into practice, is there any greater certainty that the costs are more accurate?

Thus it is evident that each of the above factors exerts a strong influence on the so-called actual costs.

Expense Distributions

All this is confusing enough, but it is only a start. The above costs represent over-all costs. Let us assume, for argument's sake, that the books reflect actual costs. The cost accountant, however, is interested in functional costs; not in the mere accumulation of primary charges for rent, telephone, supervision, depreciation, etc., but in the costs of products and services. He wants to know what it costs to run a department, the cost of a job, of a given batch of product; he wants to know unit labor costs, costs per kilowatt

hour or per horsepower hour in the power plant, etc. To do this he usually must have recourse to proration of expenses. But that raises a whole flock of new problems. The dilemma is clearly stated in the following passage:*

"An expense distribution represents an attempt to assign manufacturing expenses to particular departments either through precise measurement or through a process of estimating. Where expense items can be directly identified with departmental operations no particular problem arises, because the expense allocation is determined on the basis of benefit derived and is capable of exact quantitative measurement. Thus, where departmental meters are installed to measure the consumption of light or power the resulting cost allocation can be said to be exact. If, however, a single plant meter measures the over-all consumption of light and power, the proration of these expenses results in estimated departmental costs for these expense items. All prorations are therefore estimates and as such subject to the limitations of all cost estimates. Usually no one basis of proration is free from objection, and the cost accountant is bound to effect some compromise between a theoretically perfect method and one that is suited to the practical exigencies of the local conditions. A distribution of light expense on an area basis may be perfectly satisfactory in one plant where the lighting system is uniform, and the ceiling heights do not vary. But where some departments require special lighting, such as mercury arc, fluorescent, indirect, etc., and where different light intensities are required, and ceiling heights vary, obviously an area basis is out of the question. As nearly as possible some basis of distribution must be selected that takes into account all the factors likely to exert an influence on the behavior of the standing order expense in question. To the extent that the cost accountant must depart from such theoretical perfection he lays himself open to the objection that all such prorations are mere guesswork. The answer is that these 'guesses' represent the most careful estimates possible under the given conditions and are not to be dismissed merely because they do not represent actually measured data."

These problems, of course, represent the same difficulties that many other professions or sciences encounter. It is a case where experts differ. The layman had better keep out because this is a

* Cost Accountants' Handbook, p. 958.

private fight. But after all, is one basis of proration so very much superior to any other? Are the results likely to differ by so very much? Oviously no definite answer can be given, since so much depends on conditions in each case. In some industries, a cent or a few cents' difference in unit costs may make a world of difference in the profit and loss statement or in their financial stability.

Product Costs

There is a still more important aspect in this discussion. This time interest centers not in departmental costs, but in product costs. When a company is operating a job order system and there are many jobs being worked on during the month, it is pretty difficult to say exactly how much supervision, light, power, insurance, depreciation, etc., is to be applied to an individual job which was started, for example, at 2:37 p.m. on December 3 and finished at 9:23 a.m. on December 7. To begin with, the accountant does not even know the total expense of the plant until the end of the month. Consequently, if he is going to charge actual expenses to a job, the first requisite is to hold up all the cost figures for overhead until the end of the month. At that time, armed with the necessary information, he can reduce the manufacturing expense to a burden rate expressed in any one of many different ways, such as a percentage of direct labor, a rate per man hour or per machine hour, etc.

It can readily be seen that from an administrative point of view this is all wrong. At the end of the month the cost accountant is, or should be, busy getting out a variety of summary cost reports. If he does not get those out promptly, the information will have only limited usefulness so far as management is concerned. Hence, he has no time to "fool around" establishing overhead rates and after these are established going back to the indivdual job order cost sheets and recording in more or less detail the absorbed overhead on each of five hundred or more jobs.

Limitations of Actual Costs

But that is not the worst. Agreed that administratively the cost man has tackled an almost impossible job; but what is even more serious is the fact that from a cost accounting viewpoint, he is getting the wrong costs. Unit costs are bound to fluctuate with the volume of production. The more man hours or machine hours there are in a given period the lower the unit costs become, because the fixed charges are being spread over a larger volume.

Conversely, the smaller the base the higher the unit costs. Now this raises a peculiar problem. First of all, a change in costs may reflect a change in efficiency or it may be the result of forces over which the business has no control, such as changes in prices of materials and labor, volume of sales orders, etc. True, but how much should be assigned to each of these factors? Before the executive "bawls out" a foreman he ought to make sure that he has an unanswerable argument, that he has eliminated from consideration all factors over which the foreman has no control. The latter may logically point out that even after the elimination of price changes, etc., he could not avoid the high cost because the order in question called for only 100 drills, whereas if it had called for 1,000 drills, the costs would automatically come down; this, because the same setup charge would be spread over a bigger lot.

But the most serious and damaging indictment of actual costs follows as a corollary from what has just been said. Because the unit costs are low in periods of high production and high in periods of low volume production, the costs constitute no guide to an effective pricing policy. Imagine a situation somewhat as follows: A buyer representing a large retail outlet (say, mail order, five and ten cent store, or large department store chain) approaches our hypothetical manufacturer with an offer to take a sizable portion of his capacity output—*but at a price*. Business happens to be somewhat slow and so the manufacturer, anxious to boost his business, offers the buyer the goods in question at cost, just to keep the organization together. This sounds reasonable, and the manufacturer calls his chief cost accountant on the phone and gets the latest, up-to-the-minute cost figures. But when he passes them on to the prospective buyer, the latter picks up his hat and coat and walks out. He is not interested. Why? Well, the manufacturer's dilemma is evident. Business being bad, his volume is down; hence actual costs are high, and using these costs as a basis for pricing, he cannot get the additional business which alone can lift him out of the depression. But, it may be objected, he ought to know that and govern himself accordingly. If he therefore quotes prices in disregard of the cost figures, what in heaven's name is he paying a cost accountant for?

To summarize the limitations of actual costs:

1. There is no unanimity as to the proper items to be included in manufacturing expenses.

2. Proration is at best a hazardous business.
3. Fluctuations in actual costs are no indication of changes in efficiency.
4. They produce high costs in periods of low volume, and vice versa.
5. They create a serious administrative problem at the end of each month.

Regretfully, the conclusion is that actual costs are really accidental costs and, therefore, strangely enough, not true costs as the term is understood today.

Supplementary Rates

What then is the remedy? Historically the first answer lay in the use of predetermined rates. Now predetermined rates can be almost as bad as rates based on actual costs; certainly they raise new problems. First of all there is something in their favor since they dispose of the month-end administrative jam. The rates being set in advance, job order costs can be ascertained within twenty-four to forty-eight hours after completion of the last operation; similarly, product costs in a continuous type system can readily be computed at any time, say weekly, through the use of predetermined rates. But new problems arise; there are quite a number of methods for applying overhead to the product and these also produce different costs. There are blanket rates and departmental and cost center rates; rates based on labor cost, on man hours, machine hours, average unit costs, weight, point basis, etc. Here it becomes a nice question of human judgment as to which of these or which combination of these fits the local conditions best.

No doubt predetermined rates constitute a great advance over actual or *ex post facto* rates. But the cost accountant was faced with the problem of over- or underapplied expense, and he did not know quite what to do with it. Realizing that his inventories of work in process, finished parts, and finished goods, as well as cost of sales, would all be in a sense misstated, he thereupon corrected the error by inventing the supplementary rate, that is, a rate expressed as a percentage of applied expense, or on an hourly basis which takes up the slack between actual and applied expense and spreads it over the jobs worked on during the month, thus bringing them back to actual. The method, first developed by

Alexander Hamilton Church, had a great vogue for a while, but as its limitations and defects became known it gradually died out. It has been revived in recent years, particularly during the war in connection with government contracts. It is apparent that it provides a method for producing on such contracts the actual costs so much insisted upon by the government.

Limitations of Supplementary Rates

Nevertheless, the supplementary rate, as first conceived, contained the germ of a new idea. It was originally a supplement to a machine hour rate, the latter being based on maximum capacity; that is, the rate was constructed on the theory that the machine would run full speed all the time and, therefore, the hourly rate was comparatively low. By charging product costs at this rate, underapplied expense was bound to result, since the machine under the most favorable conditions could not operate all the time. The amount of underapplication Church conceived of as a barometer of operating efficiency, or as a measure of idle capacity. The smaller the underapplication, the greater the efficiency, and vice versa. In this way, costs were used to measure efficiency and, having served that purpose, the accountant closed them out to get back to his actual costs. In other words, the new theory implied here is that fluctuations in unit costs should reveal fluctuations in efficiency. The idea was good, but it just was not true. What then was the matter with the supplementary rate? In brief, the defects were as follows: First, the suplementary rate had to be computed at the end of the month, and all cost sheets had to be readjusted to bring them down, or up, to actual cost. This created the same administrative impasse found in connection with actual costs rates. Second, since the ultimate result was an actual cost, it suffered all the defects of actual rates discussed earlier in this paper, viz., high costs in periods of low volume, etc. Finally, even as a barometer of shop efficiency it did not live up to its expectations. In constructing the predetermined machine hour rate, it was of course necessary to estimate the expense of operating the machine or cost center. Suppose the estimate was $4,000 for 2,000 hours, or $2 per hour. If the machine ran only 1,600 hours it absorbed $3,200 of expense. Now suppose that the actual cost of machine operation turned out to be only $3,200; then there was no underapplied expense, no supplementary rate, and consequently the shop was presumed to operate at 100 per cent efficiency. Yet

there was idle capacity of 400 hours which the account did not reveal. What happened was that there were changes in price levels or perhaps errors in estimating, and these automatically vitiated the conclusions.

Normal Capacity

The next development was to change the supplementary rate technique. The latter was admittedly clumsy, and it was accordingly abandoned. But the idea persisted of using the account for the kind of information management wanted, that is, information to be used as an instrument of control. This took the form of a predetermined rate based not on maximum capacity, but on normal capacity. The latter represents a stated percentage of maximum capacity intended to allow for unavoidable shutdowns due to changeovers, setups, maintenance, etc. By lengthening the period for which the rate was calculated, it became an average rate, thus smoothing out the more violent fluctuations from seasonal and cyclical causes. There was no longer any talk of reconverting to actual costs in the end. This new idea carried the definite implication that actual costs were not real, that the true cost of the product included the overhead at normal capacity. And within the last decade or two, that has become axiomatic. The result is a stabilized cost, representing the overhead charged at a known level of operations. Any over- or underabsorbed expense represents approximately a capacity variance which, according to many cost accountants, does not constitute a part of the cost of production, but is to be considered a gain or loss of the business as a whole. In other words, unabsorbed overhead resulting from idle capacity was something for which the customer could not be expected to pay. The manufacturing cost of an article thus covered the outlays for material and labor and the overhead at normal capacity.

Standard Costs

The basic idea of a normal overhead rate is that it represents a cost at a specified level of operation. This logically led to an extension of the idea to set similar levels for material and labor costs as well. Such a concept represents the basic feature of standard costs, and it rests on the assumption that the actual cost has to be set beside the standard cost and any difference between them subjected to analysis to discover the reasons for the vari-

ation. In order to measure the variations, one has to be certain that the standard represents a known level of accomplishment. Such standards are found by a process of scientific investigation using past experience and controlled experiment. In fact it may at once be stated that the true cost of the product is the standard cost and that the actual cost is important only to the extent that it reveals deviations from a standard. By the application of statistical techniques, the cost accountant is then in a position to separate these deviations or variances into those which are controllable and those over which he has little or no control. This naturally opens a tremendous field to the cost accountant. He has definitely stepped out of the ranks of a recorder of history and is concerned now, in collaboration with the engineer, in setting standards, translating them into dollar amounts, and through them controlling the operations of the business. We are all familiar with the nature of the information obtained by this careful process of standard setting and variation analysis. It is a method for separating various kinds of price variances (material price, labor rate, etc.) from controllable variances (material usage, labor efficiency, etc.) and thus being able to develop figures for control purposes.

But, of course, if the figures are to be used for control purposes they must be compiled more frequently. Thus the daily compilation of cost data for control purposes has come to be taken for granted. The motive is to set in motion forces which can correct a bad situation before irreparable damage has been done. The more often reports are prepared and acted upon, the less damage is done in the intervening periods.

Looking at this system as a whole, one can at once visualize the enormous strides that have been made within this relatively short span of time. The cost accountant has come a long way, gradually abandoning faith in an actual cost and going wholeheartedly over to the idea that a standard cost is really the true cost. The adoption of this idea enabled the cost accountant to use the cost figures as instruments of managerial control. They represent a definite planned campaign against which actual performance is to be measured.

Profit Control

Standard costs have brought the discussion pretty well up to date. They have enabled the cost accountant to step out of the role of a clerk and become a planner and analyst. As he acquired

a greater understanding of standard costs, he began to see other possibilities. They could be and are being used not only for purposes of budgetary and operating control, but also for valuation of inventories, as a sound basis for pricing and, last but not least, as an instrument of profit control. Thus the cost accountant has broadened his concept to the point where expense control becomes an incident in profit control. The latter idea is much younger and therefore not as fully developed. It involves a study of the behavior of costs, the construction of break-even charts, and the necessity of planning ahead. That is, if he is going to start out with the idea of profit control, it must be based upon a planned volume of sales, which in turn will give rise to standard costs for the various elements with which every one is familiar. Thus everything is planned for and subjected to rigorous control. Failure to achieve the aims set forth in the original plan must appear in the form of some kind of deviation in the records and must be subjected to analysis to ascertain the causes. This has by now become a familiar pattern: the plan, its execution, and the final analysis coupled with the placing of responsibility for failure to achieve a set goal.

Conclusion

In this review of some of the highlights in the development of cost accounting, an attempt has been made to trace the very complete reversal in outlook of the cost accountant and the problems he has encountered in carrying out his ideas. These problems have, of course, not all been solved. While cost accounting has achieved a measure of maturity, it nevertheless faces a host of problems which present a continuing challenge to those interested in this field.

ORGANIZATION FOR COST REDUCTION

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AT the present time all industry is faced with increasing material and labor cost levels and as a result increased attention is being directed to improved manufacturing methods, less expensive product design, and improved efficiency of operation. In general this problem may be divided into two basic elements—cost control and cost reduction. This discussion will be confined to the latter phase, which may be defined as the lowering of the accepted level of costs as dictated by the existing design and methods. Thus it is separated from such cost control items as labor efficiency, varying manufacturing losses due to controllable causes, etc., as well as fluctuating material prices and labor rates of pay.

The principles in this discussion may be applied to a business of any size, although it will be quite apparent that the organization required must necessarily be tailored to fit the needs of the individual concern. It has quite generally been proven that the most satisfactory method of obtaining cost reductions is through the use of the project system. This method will be described in detail under the following subheadings, which may be considered as fundamentals of the system:

1. Division of cost reduction ideas into single specific projects.
2. Suitable identification of projects for reference and follow-up.
3. Estimated valuation of reduction.
4. Assignment of responsibility for investigation.
5. Assignment of scheduled date for completion.
6. Organization.
7. Setup of method for following and reporting progress of program.
8. Suggestion system.

Specific Projects

This is the starting point of the entire program and, as with most any starting point, it is probably the most difficult phase of

the entire routine. Cost reduction ideas usually are stored away in the minds of engineers, foremen, office supervisors, etc.; but these people are generally waiting for a time when things are "not quite so rushing" so they can investigate the idea and develop it if the investigation shows it to be practical. Unfortunately, the "not quite so rushing" time seldom arrives and the idea dies without ever having had a chance. The purpose of this planned cost reduction procedure is to provide an outlet for these ideas so they may be developed rather than being withheld in someone's mind.

These cost reduction ideas are recorded in sufficient detail so that they may be investigated at an opportune time. If the ideas cover a range of several distinctly different fields it would be advantageous to break them down into separate individual projects. At first it might be difficult to draw the cost reduction ideas out of the minds of the individuals concerned. One successful method of doing this is to have a group sit around a table and study either the prints of the product in detail, or better still, if possible, to disassemble a product itself and study the actual parts. In this analysis the current manufacturing method of each part is reviewed and suggestions made as to possible improvement. In a like manner suggestions as to possible design changes to facilitate manufacture are solicited. The materials being used are also considered and, as new materials are constantly being introduced, consideration is given to possible changes. It can readily be seen that a list of cost reduction projects could be developed from the suggestions brought out during the analysis.

Another method of obtaining projects is through the furnishing, to each individual from whom ideas may be expected, of a pad of preprinted forms on which their ideas may be recorded and turned in for adding to the backlog of projects being held for future investigation. In certain cases it may also be advisable to have specialists assigned to the specific task of studying the design and methods from the viewpoint of adding to the project backlog.

Identification of Projects

This phase of the activity involves the assignment of a project symbol which will be used in filing the project data, and as an aid in setting up a ready reference number for scheduling and following the progress of the investigation and development of the project. It would be helpful if this number incorporated the date

of the project and a code concerning its nature as well as a serial number. In a large enterprise the number should also include the identity of the manufacturing division in which the project is located.

The code as to the nature of the project, referred to above, is an attempt to show approximately the time that might be expected to elapse before the project is expected to mature. Such a grouping might be as follows:

Group 1. Can be put into effect by the manufacturing division.

Group 2. Awaiting approval of capital expenditures.

Group 3. Engineering design studies.

Group 4. Long range program.

From an examination of the above it is seen that any individual project may go through different groups in the process of its development. If this is the case the identification number of the project is changed as often as necessary.

Estimated Valuation of Saving

It is quite important that an estimate be placed on the possible savings of the projects as soon as possible. While it may not be possible in all cases to establish an accurate estimate at the start, this should not discourage the establishing of a figure which would at least give the general order of magnitude of the savings possible. On the basis of the potential savings a determination could be made of the amount of effort and capital expenditures which might reasonably be invested.

A value on the projects also makes possible a summation of the backlog of projects. This is very helpful in measuring the effectiveness of the whole program, as will be discussed later. As the investigation of a project proceeds, the estimate is adjusted according to the additional information obtained. It is too much to expect that all projects will turn out to be practicable and accordingly in some cases the estimated savings will drop to zero and the project will be dropped.

An appropriate basis for this valuation, so that the proper weighting will be given each project, is the flat material and/or labor reduction involved on the basis of an *annual* rate of production of the parts affected.

Responsibility for Investigation

In general, experience has shown that the people on the job are in a better position to investigate cost reduction projects than a specialist who cuts across existing organization lines. On this basis the design engineer is given the responsibiilty for investigating projects involving design, the planning man for methods, etc. The important thing is to make a definite assignment for the investigation of each project to an individual and to record that individual's name in the project records.

Scheduled Dates for Completion

It has been said that you cannot make a time schedule for a man's thinking and the investigation of a cost reduction project certainly involves thinking. However, this statement is not entirely true and time limits can and should be established for the completion of the project investigations. It may be necessary to make extensions, but this can be done easily.

As stated above, it is preferable to have the line organization people conduct the investigations and since these people have other work to do it is essential that a time schedule be worked out so that they will not continually push the investigation work toward the bottom of the pile of work on their desk.

Organization

In the above discussion nothing has been said concerning just who would direct the cost reduction program. Actual experience has shown that one successful method is to have a committee act in this capacity. This committee has as its chairman the responsible supervisory official of the unit and as its secretary the cost accountant. The balance of the group would include the design engineer, planning man, material and stock man, wage rate man, etc., with the number depending on the size and organization of the unit. In a small group this committee would have both a steering and an operating function while in a large division its function might be limited merely to that of steering and review of progress and subcommittees established for the operating functions.

It is particularly important that the job of secretary be assigned to the cost man as he then will be the caretaker of all of the records and thus can have the material necessary to act as a spark plug for the entire program.

Reporting Progress of Program

There are two main problems involved in the follow-up and reporting of progress of the cost reduction program. The first involves the individual projects and the second the over-all program. The cost man, as secretary of the committee, is the man responsible for the follow-up on the individual projects. He brings up-to-date information to the attention of the committee on the standing of the various projects.

If the number of cost reduction projects is adequate and the follow-up is effective the over-all program should take care of itself. However, it is difficult for top management, especially in the larger concerns, to talk in terms of details and hence an over-all measurement is necessary. This may take the form of a monthly report of cost reductions effected, again on the basis of an annual rate of production. The annual rate basis is preferred so that reductions put into effect in the latter months of the year will be on the same basis as those completed early in the period. It is also advisable to establish a budget against which to measure the over-all results and also to report the value of the backlog of uncompleted projects. With a monthly report showing these three figures for each manufacturing division, top management could be given a very complete picture of the progress of the over-all program.

Suggestion System

One point which has not been discussed is the solicitation of cost reduction ideas from the people actually on the machines, benches, etc. Most concerns today have an organized suggestion system in which the employees are given an award for cost reduction suggestions which are adopted. If this is handled effectively it provides not only for improved employee relations but also for a source of cost reductions for the company.

In conclusion it might be said that there is nothing new or revolutionary in the above routine. This is certainly true, but the value lies in the proper coordination of the various steps into a whole program rather than the consideration of any of the elements alone.

MAKING THE OFFICE PAY A PROFIT

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THERE is nothing spectacular about the office. When the plant designs a new product or perfects a new process it is advertised to the world. When sales beat a previous record, it is reported on the financial page and perhaps the price of stock goes up. But what happens in the office is never found in the headlines. Yet that office is the control center of the business. It chronicles the past, provides up-to-date information on the present, and shapes future policies thtt mean profit or loss. Although it may not have been in the headlines recently, it certainly is going to be very much in the spotlight during the months and years ahead.

During this last year of reconversion and confusion one fact emerges clearly—that we have ten to twelve million more people who want to remain on the labor force than before the war. Also we have about forty per cent larger plant capacity to utilize, and if we fail to keep both people and plant employed, the popular demands on Government for job security are likely to be so overwhelming that we may have to trade some of our cherished freedom to provide it. Now, fuller employment under private enterprise is possible only by producing more goods at lower costs, so that more people can buy them. In this simple formula we find the keynote which must shape our planning in the years ahead—lower costs.

During the war both costs and profits were guaranteed for most of us by government contracts or regulations. There was little incentive for cost control, because of the urgency to produce, regardless of costs, to win the war. Since then we have physically reconverted the plants. But have we been mentally converted to the coming competition that may make present costs more burdensome and even small reductions more important? There are some who hope for more relief from government. But let us not be lulled into complacency by political promises of lower taxes and restrictive labor legislation. Taxes and labor will both continue high and even if lowered would benefit our competitors as well as ourselves.

Nor should we let inflated income from high prices mislead

us. Agricultural and textile prices may soon be softening. And a plentiful supply of many raw materials and finished goods may be developing at the same time that new products and new uses will compete for preference and realign established trade connections. Those are not conditions that favor sustaining present prices. Competition is shaping up and what a battle it promises to be! Now the fact that these are forces outside the business, over which we have no control, only serves to emphasize the chief remaining source of profit inside the business, over which we do have control—the overhead or general costs of doing business.

But that is not all. While factory employment has increased about 100 per cent since the beginning of the century, in the same period employment in the office has risen about 400 per cent. Two specific things are suggested by this. First, it certainly highlights the growing complexity of modern business control which has steadily increased the need for more records and reports. But second, and more important, it suggests that we have both the need and the opportunity to apply factory production principles to office work in a degree not realized before, to obtain this more useful information at lower costs in office operation. In other words, the real offset in the office is the same as in the plant—improved processes, shortcut methods, and better relations.

In this paper a few of these possibilities are analyzed to see how they can be shaped to the coming needs and opportunities.

1. Job methods analysis.
2. Trends in work simplification.
3. Forms analysis.
4. Trends in accounting records and machines.
5. Incentives.
6. Personnel training and relations.

Job Methods Analysis

Before the war many well-known companies had already organized staff units to supervise methods or training or both. With that experience to aid them when war started, a committee of management engineers was enlisted to organize the Army Service Forces for the War Department. This control unit did a brilliant job, stressing, among other things, work centralization. Too many offices decentralize their methods control. They rely upon a new supervisor or employee promoted to a different position to make changes to justify his promotion. That is not enough.

Many such improvements are superficial. But even when the "new broom sweeps clean," the job soon settles down and is liable to go to seed again as the novelty wears off and the enthusiasm engendered by the changes fails to keep pace with changing requirements.

Centralisation of Methods

It takes a fresh, objective viewpoint with a single-minded purpose to overcome inertia and see new opportunities. A permanent, centralized methods staff or committee or individual is needed. To operate effectively:

1. The staff members should be selected for their abilities, be paid well, and relieved of routine duties.
2. They should report to the highest operating officer and have his full support.
3. Their approach should be one of tactful but persistent inquiry, thorough analysis, and objective conclusions.
4. They should have full authority to enforce their recommendations, when necessary, but should never do so until all efforts at voluntary cooperation have failed.

What is a simple way for this staff to proceed? Whether the office is large or small, a logical starting point is a desk-to-desk job analysis, for it is here where personnel and methods meet. Also it is well to remember, of course, that most of the information desired is in possession of the worker, and in two respects workers are most human: they resist change and they resent criticism. Therefore, tactful management will make them partners in the study and sell them on the benefits they will derive.

Job Description

A common method is to start with a job description blank, detailing the job by steps, noting the short-cuts followed, common errors to avoid, and attaching samples of work performed. The investigator will probably be surprised to find duplicated procedures, diluted duties, bottlenecks and retraced flow of work, outmoded forms, unnecessary reports, expensively prepared records, and other costly operations.

Every office should chart the flow from desk to desk of orders, invoices, and other volume jobs. One of the objects, of course, is to see that the processing of paper proceeds in as nearly a straight

line as possible. In a recent instance where this was charted the line looked like the path of a football passed back and forth in an Army-Navy game. The desks originally were placed for the processing then required, but in spite of a dozen changes in requirements, not a desk had been moved. Rearrangement reduced the transportation of those orders from 572 feet down to 180 feet or nearly 70 per cent.

A department in an eastern city not only found that excessive travel was costly, but sales tickets that were loosely bundled tended to get lost in transit and that increased trial balance troubles. The study resulted in reduced travel and in providing covered receptables for transporting the tickets.

In a department store in a midwestern city, payable invoices were being forwarded from the purchasing to the accounting department where they were registered and an apron sticker was attached for subsequent approvals. Then they went to the receiving room for checking against the goods, to the retailing office for mark-up, and back to accounts payable for vouchering. This involved five destinations with loss of time that often jeopardized paying before the discounts expired.

That job was restudied. It was decided to register the invoices in the purchasing department where they first arrived, skip the accounting and route them directly to merchandise receiving. Here the receiving report was changed to a multiple form. One copy served as the invoice apron, and another as a substitute for the invoice itself which was formerly sent to the retailing office. This permitted invoices to be rerouted immediatly to accounts payable for vouchering—three destinations instead of five, with fewer lost discounts—and reduced costs in two directions.

The flow chart is one of the most effective tools we can use. It is based on location, sequence, and time intervals required to complete the present operations. This may then be compared with a parallel flow chart illustrating the proposed operation, and highlighting the steps eliminated or simplified.

The fact is that war has renovated many factories twice, once going into war and once going into peace. But in too many cases the office still has the accumulated debris of both war and peace. One must recognize that the office is a paper work factory, and that practically every clerical hour is spent in transporting or processing this paper work. There is no more reason to tolerate

inefficient procedures, obsolete tools, or excess personnel in the office than in the plant. Constant study and analysis are necessary.

Trends in Work Simplification

The place to start in work simplification is at the individual desk. The greatest manual efficiency is developed by proper use of about five motions, in this order—finger, wrists, forearm, whole arm or body, or a combination of them. Therefore, the work area on a desk can be charted into definite motion sectors, where paper, tools, etc., can be so located that the more efficient fingers perform the most operations, and the less efficient body motions, the fewest. This may seem too elementary but in most cases analysis will prove otherwise.

Motion Study

A nationally known mail order house has a large paper handling operation. About 1,200 invoices per day need to be sorted into merchandise and expense, with the former analyzed alphabetically. These were formerly sorted into 25 piles on the top of a table. First, it was necessary to stand, which was fatiguing. Then most motions required the full arm and body. Also, it was difficult to keep the sorted piles separated.

The first improvement was to construct bins to separate the piles, then elevate the rear rows to reduce the reach. This resulted in some five or six per cent increase in efficiency. Then a young man with fresh ideas took charge and constructed a semicircular sorting rack with the girl comfortably seated right in the middle. There are three tiers stepped back above each other, with eight compartments each, and one more at left rear and right rear. This placed the working pile in the center with all compartments reached by simple wrist and forearm movements. The result was to speed up the work by 38 per cent and to reduce missorts by over two-thirds.

There are other savings possible in paper handling. Recently an office wanted to collate 20 mimeographed pages into sequence for assembling a procedures manual. The appropriate department was asked to assist and observed two girls with 20 piles of sheets spread over a table top, awkwardly interfering with each other to assemble the copies desired. Within a few days representatives of the company attended an exhibit of office appliances, and a

young man demonstrated a new sheet collator that automatically sorts ten sheets at a time. The box cabinet had ten shelves with a pile of one page in each. A simple pressure of a foot pedal withdrew a complete set in one motion, by suction fingers on the top of each pile.

Mechanical Aids

The importance of proper tools and devices—call them gadgets if you will—that economize time and motion and save errors cannot be stressed too much. Office equipment manufacturers have made some available. But many devices have to be designed for the job and even for the anatomy of the worker, and are best produced right in the office. Special desks, sorting devices, files, ticket and form holders, templets for checking forms, etc., pay for themselves in a short time.

But work simplification is more than just gadgets: it is a state of mind in which everyone challenges everything with a view to improvement. There are already certain trends in simplified procedures that are shaping up for the future. Cycle billing is certainly one of them.

Many years ago gas, electric, and water utilities started to rotate the billing of customers accounts by geographical sections throughout the month. Oil companies later adopted the plan, then telephone companies. Now more than 200 leading department stores are cycling in alphabetical billing controls. They file the tickets daily and list all entries at the close of the cycle period on the statement, obtaining automatic totals to the credit history ledger, in one operation. They also save the time and labor of describing each item by attaching the original tickets to the statement after photographing them for their own record.

In the billing operation the form handling is so smoothly synchronized that most of it is done while the machine operates. As a result, over 600 tickets are posted to nearly 200 accounts per hour. A reduction of about two-thirds of the machines and probably one-fourth of the personnel is usually achieved. Even accounts receivable can be simplified.

Forms Analysis

A third opportunity for practical improvement arises from the design and use of office forms. This deserves attention because

practically every clerical hour and all cost control revolve about the use of forms. In smaller firms, a methods unit could consist of one man. In such cases a simple starting point is to assign him to gather together all the forms in use and analyze them. Almost anyone can undertake that.

Smaller Forms

In all lines there is a marked trend toward the use of narrower, more compact ledger forms. Simple customers' ledgers which used to average about 8½ inches wide are frequently reduced to 4½ inches, with debits in black and credits in red, posted in the same column. In New York, real estate often sells for several hundred dollars per square foot. A ledger half as wide as before saves floor space that often has real value.

However, a firm on the west coast recently was in serious difficulty by trying to use too narrow customers' account files. They had purchased a six-inch wide visible-index file and piled the cabinets three sections high. The result was that nearly 5,000 accounts were tied up by a person standing in front to select one account. More floor space and different files were needed. The pending replacement will cost about $22,000, which illustrates that each case should be carefully analyzed and much foresight used.

One large national concern analyzed all its forms and was able to reduce them from 17,000 to 11,000 by these methods. It saved $134,000 annually in printing expense alone. Of course, the clerical savings can be even greater by use of the simplified procedures resulting.

Some expensively prepared reports are not used enough to justify the cost. For example, a certain manufacturer, at headquarters, had prepared twenty copies of a monthly sales distribution of branch sales by styles, by lines of business, for each county and salesman's territory. When the expense of this procedure was challenged, it was found that the only ones who could use the figures profitably were the branch managers, who had all the information at the source anyway. As a test of the real need for this report it was decided to discontinue it without prior notice and await the reaction. During the next three months only one inquiry regarding it was received. Needless to say, it was not prepared any more.

Redesigning Forms

There are four good tests by which a form can well be judged:

1. Is the information it furnishes adequate for the needs?
2. Is the form properly designed for printing, entry, reference, and filing?
3. Is it up to date and available when wanted?
4. Is it produced at a cost comparable to its value?

Some of these principles could be applied by railroads in preparing passenger tickets. For example, when you purchase tickets from Detroit to San Francisco they are usually about a yard long; they are individually rubber-stamped many times; they have several repetitions of handwritten data; and a long time is required to prepare them while people stand in line.

Compare this with the tickets used by many airlines today. A typical example is a carbon interleaved form, four inches by six inches in size, issued from an autographic register, which replaces 78 different passenger forms. Five copies are made. Three of them, which are stapled together, are given to the passenger. He retains number 3. Number 4 is sent to the connecting line and number 5 is locked in the autographic register for the auditor. As a result of this procedure, one well-known airline states that it issues the ticket in one minute or less, saves 50 per cent of time consumed at departure in manifesting passengers, saves 80 per cent of auditor's time in checking blank ticket stocks on hand, plus $60,000 in direct costs annually. That is what form analysis and redesign can do.

Trends in Accounting Records and Machines

The development of machine records had always paralleled the needs of business whose operations they reflect. Before the war there was a steady trend toward centralization of functions in some industries and certainly in government. For this reason much attention has been given by top management in past years to "control through reports." But the war showed that centralized control alone could not solve the problems of local operation. The managers on the job were the ones who first needed information and it had to be up to date. The present trend is so to prepare this detail at the source that the reports can be made as a by-product, by sending copies or summaries of the detail to headquarters where they are filed, filmed, or otherwise consolidated by top

management. This shift in emphasis from reports as the main objective, to up-to-date accounting on the job with reports as by-products, is noteworthy for two reasons. It furnishes more useful information and reduces office costs.

Multiple Balance Records

There also has been a rapidly increasing use of records with multiple balances, which are now produced, of course, by highly automatic machines. This arranges related data so they can be coordinated and interpreted together, to give local management a complete picture as a basis for action. The principles evolved by methods men are sometimes summarized about as follows:

1. Combine the preparation of related records that have common entries into a single posting operation, if practicable. This saves time and facilitates auditing.
2. Combine the related records into a single form showing the several balances, if the information is used in one office.
3. Wherever possible, use copies or summaries of the original records created at the source to post to or to serve as the final records, without creating intermediate media.

To illustrate the application of these principles in budgetary accounting: the old method was to maintain one ledger for appropriations, another for encumbrances, and another for expenditures. Entries on each record duplicated, in part, the entries on another. At the month-end it was necessary to re-add certain debit and credit columns to obtain totals needed for reports. Then the reports had to be written separately and checked back against the ledgers.

Today, instead of three separate one-balance records, the modern method produces a budget ledger with five balances consisting of total appropriation, total orders outstanding, total expended, total unexpended, and free balance remaining. This type of budget ledger began to be adopted by local and state governments in the late twenties, and soon thereafter federal fiscal offices started to use the combined record. Now it is practically standardized.

Control Information

In the planning and production departments it is impossible to have slow records and fast production. If control information is

not geared to the production tempo, raw or semifinished parts run out of stock and components are not ready at the appointed time in the assembly process, because somebody guessed wrong. Today a machine, in one operation, posts items required for production, ordered from vendors, received and issued, together with four balances showing quantities on hand and on order, total required, and total available, all on one form. The relationship of each balance to all others can be quickly interpreted as a guide to planning and production. Not periodical reports but up-to-date accounting is needed.

In a similar manner, multiple balance records are reducing the cost of maintaining payrolls, earnings, and tax ledgers, distributions of purchases and sales, and many other office records. One can readily appreciate the clerical savings, accounting control, and audit value involved.

Incentives

It is often the extra, added inducement to work or think beyond the regular call of duty (usually called incentives) that produces profitable results and improves relations. What incentives are provided for employees to work *with* you and not just *for* you?

Types of Incentives

On the clerical level, many volume jobs such as typing, billing, posting, etc., permit inducements of increased earnings or shorter hours. Of 104 stores in a recent survey on customer billing practices, 21 were found to pay bonuses for production over quota, with penalties for errors. Quota is often based on average past performance plus ten per cent.

One of the large stores in Detroit assigns sufficient accounts to require about 4,000 postings per operator per week. Payment is on a piecework basis. Billers may come to work as early as seven thirty and many go home by two or three o'clock, thus providing both financial and nonfinancial incentives. These working conditions attract more mature, dependable billers, many of them married women, because they have more time available at home in the evening.

Employee suggestion plans also provide incentives that have saved millions of dollars in the plant and office. Experience during the war was summarized by the president of the National Association of Suggestion Systems. He recently stated that mem-

bers of the Association received 711,224 suggestions during that period, adopted 176,480, and granted $4,047,324 in awards. One-fourth of this was for nonprofit ideas, such as safety devices, but the balance produced approximately $27,000,000 in direct savings.

Indirect Benefits

The indirect benefits were even greater because they:

1. Improved employee relations, by creating a feeling of partnership in the company operations.
2. Provided outlets for employees ideas, free from fear of criticism.
3. Provided increased interest in work.
4. Minimized grievances.

Nailing an old-fashioned suggestion box on the wall is not going to produce all these results today. It goes far beyond that. The objective is to encourage everyone in the organization to be constantly alert to improve the things he shares in doing, by showing him how he benefits in easier work, or better quality, or promotion, or increased salary, or special award, or just pride in sharing the company's general progress. The point is that management has to cultivate new ideas by showing recognition in some form, whether the idea proposed is adopted or not.

Employee suggestions begin at a point where the average methods man arrives only after considerable study to familiarize himself with the problem. They lead directly to places where need and opportunity for improvement is greatest. For that reason they speed up improvements that otherwise may be long delayed or never attempted.

Personnel Training and Relations

Any discussion of office costs and profits would certainly be incomplete today without considering possible improvements in employee training. One way to estimate the value of a training program is to remember that the investment in personnel over the years is many, many times greater than the entire investment in plant and equipment. The least that can be done to increase the returns on this investment is to have a permanent up-to-date program of personnel training, beginning at employment and adapted to continuing needs. If management has not been sold on the benefits of such a program before, this is the time to consider it,

because it will pay real dividends in lowered costs and improved relations in the unsettled conditions that characterize our times.

Selection of Supervisor

Organized training starts with the selection of the right supervisor, one who not only has technical knowledge and an analytical mind, but broad human sympathies, infinite patience, and an enthusiasm for the work; in other words, true teaching instincts.

Then the goal must be established and here there are two general choices: first, training for the immediate job to make workers more efficient technicians or, second, to establish a longer and broader program with more emphasis on relations and preparation to develop capable administrators. Both programs are good investments and suited to the times.

Staff Training

Many companies are planning for these goals with local adaptations. The staff training program of one of the largest auto manufacturers not only includes technical development, but emphasizes oral and written communications. It is felt that regardless of what one knows, it is of little value unless it can be effectively communicated to others.

The program is not formalized in the sense of being ready-made for all alike, but it organizes those facilities and activities which are expedient for the individual's objective. These include libraries, reading courses, films, round table discussions, prepared study reports, questionnaires, etc. It is planned so that each person utilizing the full facilities can carry three programs concurrently:

1. Developing of greater technical skill in his own work.
2. Learning more about some other activity or department.
3. Improving himself in personality and relations with others.

In many organizations much emphasis also is placed on the original selection of the applicant for a position, in order to secure quality at the source.

Participation in these programs by department heads inspires others to follow. In one of Chicago's best known concerns, the president and thirty other executives personally took their proposed course in work simplification before it was approved for others.

Human Relations

It is well to remember, though, that learning to produce "in ten easy lessons" is not the end goal of staff training; rather, the aim is development of the individual. Materials and machines have been engineered too long while the human engineering of men and women has been neglected. As previously pointed out, there is more invested in personnel than in plant and equipment, yet only a part of personnel talents has been utilized. The unused potential is tremendous.

Human relations determine more outcomes of business life than is realized. One of the country's largest employers has said that adaptation of personality in relationships with others is 75 per cent of the outcome. An eastern university studied the cases of over 4,000 men who had failed and who had lost their positions. While about 34.2 per cent were due to lack of technical knowledge, over 65.8 per cent were due to lack of personal adjustment—a preventable cause. Who knows how many could have been saved for themselves and their employers by a more understanding program of training and development?

No small part of the discontent and turmoil of recent years stems from too exclusive emphasis on skill, technology, production, and profits. That phase is passing. During the past year, a leading auto producer replaced over 1,000 executives and supervisors, in order to shift the emphasis from arbitrary decision to human understanding. And now, so confident is he of improved relations and lower costs that he recently announced cuts in new car prices to meet the coming competition, while labor and material components still are high.

The key to making the office pay a profit lies in following some of these examples. This means, first, we must engineer better methods to mass produce office work, and second, we must constantly stress the human equation and develop the latent abilities of our staff. The result will be not only lower costs to meet the coming competition, but an office that is a much more effective instrument of control for management.